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ABSTRACT

The insects discussed in this document are divided into three categories: (1) those which undergo their complete development within the home, usually at the expense of food, fabric, or a human host; (2) those which accidentally enter the home; and (3) those which damage the structural frame of the building. In each case, life cycles and identifying characteristics are presented with remarks about the specific effect incurred by man. (CS)

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HOUSEHOLD AND STRUCTURAL PESTS

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HOUSEHOLD AND STRUCTURAL PESTS

A. Introduction

The insects covered in this section are divided as follows: (1) those which undergo their complete development within the home or other building, (2) those which accidentally enter the home but which spend most of their lives outside, and (3) those which attack the structural framework of the building itself. In the first category are those insects which live, grow, and reproduce inside the home, usually at the expense of food, fabric, or blood of the human host. In the second group are a wide variety of insects and other types which enter the edifice by accident and are a problem mainly because of their presence. The third group of insects contains several species which destroy the structural wood of the building and which may expand their attack to include other items of plant origin within the home.

B. Dry Food Insect Pests

The commonly occurring insect pests of dry food products are as follows: (1) Beetles: sawtooth grain beetle, flour beetles, spider beetles, dermestid beetles; and (2) Moths: flour moths, Indian meal moth, Angoumois grain moth. More rarely encountered are psocids (Corrodentia) and mites.

1. Beetles

a. Sawtooth Grain Beetle

Adults are dark brown to reddish brown, 1/8 inch long, with toothlike projections on the sides of the thorax. Eggs are dropped in the infested food product; larvae are worm-like, white, short, and very slender. Pupation occurs in small chambers within the food supply. Under usual household conditions these beetles build up rapidly, with a new generation maturing about every 3 weeks.

b. Flour Beetles

Several species may be encountered here but must of necessity be treated in a general manner. Most of the "flour" beetles

are about 1/8 inch long, but a few less common types are smaller. The sides of the thorax are smooth and straight or slightly rounded, the body is usually flattened, and the antennae are enlarged toward the tip. Eggs, larvae (white, slender) and pupae all occur in the food supply. Development of the different species, from egg to adult, varies from 4 to 9 weeks; population increase may be rapid.

c. Spider Beetles

Adult spider beetles have long legs, a hump-backed, rounded appearance (in a small way similar to a spider), are wingless, reddish to black, and may be smooth and hairless or covered with long, pale, curving hairs. Larvae are white, grublike, and occur in the same places as the adult, but often form round, coccoon-like cases of their food, inside of which they feed and grow. They are essentially omnivorous feeders and may (in some species) function as scavengers. Development may take up to a year but can be completed in one spring-summer season.

d. Dermestid Beetles

These beetles are basically scavengers on proteinaceous materials but often infest grain and cereal products. Adults are 1/8 to 1/4 inch long; oval to elongate-oval; reddish brown, brown, black, or occasionally speckled; and somewhat flattened on top. The antennae are slightly enlarged toward the tip; when disturbed, the adults may fold antennae and legs tightly beneath the body and play dead. Larvae have bands of short, scale-like hairs across each body segment and a tuft of longer hairs extending backward as a tail; the larvae frequently have a front-to-back taper but in some species are shorter and more oval when seen from above. Larvae are usually reddish to golden brown and are 1/8 to 1/4 inch long. All stages develop in infested human, dog, or cat food supply; growth is rather slow.

2. Moths

a. Mediterranean Flour Moth and Indian Meal Moth

These insects are the most common pests in this group. Both are found frequently infesting stored food products such as cereals, flour, mixes, popcorn, and bird seed. The moths may not be apparent at first, but infestations of eggs or larvae will develop in packages stored away on pantry shelves. Later opening of the packages releases a flight of moths which frequently are mistaken for clothes moth. The flour moth has gray front wings marked with wavy black lines. The meal moth

has front wings with a gray-white patch near the base and a coppery brown color on the outer half or two thirds.

Larvae of both types are about 1/2 inch long, dirty white or occasionally pale green, and spin great amounts of web in and over their food material. Mature larvae often crawl away from the food supply before spinning coccoons for pupation; this migration is frequently the first indication of an infestation and causes the housewife no end of alarm. Egg to adult development takes about 4 weeks, so that population increase can be rapid in food stuffs stored in out-of-the-way locations.

b. Angoumois Grain Moth

This moth might on occasion be a pest of whole grains, ear corn, popcorn, or seed products imported from areas to the east and south. This delicate little moth is about 1/2 inch long and is light brown. The hind wings are light gray and are fringed with long hairs on the posterior margin. Eggs are laid on the grain; newly hatched larvae bore their way into the kernels and complete development within the grain. The complete egg to adult cycle takes about 5 weeks. Infestations by this insect can be verified by visible presence of adult moths only, since all other stages develop within the grain.

C. Fabric Pests

The insects of primary concern in this category are the clothes moths and the dermestid beetles. Larvae feed on materials of animal origin, such as woolen clothing, upholstery, and carpeting, and such miscellaneous materials as feathers, fur, hair, hides, leather, and mounted game, fish and birds unless suitably protected. The old "horsehair" furniture was also subject to damage. Silverfish may become pests of clothing at times; they chew on a variety of fabrics for the starch or sizing and are likely, therefore, to damage many types of material.

1. Clothes Moths

a. Webbing and Casemaking Moth

Larvae of the webbing clothes moth spin silk webbing upon or between layers of woolen materials upon which they feed. The casemaking clothes moth larvae spin silken coccoon-like cases in which they live and feed. All life stages (egg, minute white larvae, pupae, adults) occur in the same area of infestation. The adult moths fly out of the original infestation site and spread the problem to new areas.

Opening a long-closed closet door or wardrobe upon a swarm of flying moths is often the first indication of an infestation. By then, clothing will already have been severely damaged. Clothes moth infestations often also occur in the woolen "lint" from carpeting that collects in cracks, around baseboards, in cold air ducts of the heating system, in moldings and other structural features, and in neglected corners of closets and other storage areas. After completing several generations in these more remote sites, the adults fly out to infest still more materials.

Winter clothing stored away in warm closets without a spring dry cleaning is highly susceptible to attack; the cuffs, pocket facings, and any other soiled areas are the first places to be attacked and eaten by the larvae. Folded and stacked woolens, rolled and stored carpeting, and various other objects and materials of animal origin are likely sites of infestation when left undisturbed for long periods in dark, warm storage.

The moths are very small (1/2 inch wing spread) and are grayish white to light tan; each hind wing has a long fringe of silky hair on the posterior margin. Eggs are minute but may show as pinhead-sized white dots on dark infested material. Larvae are white, 1/16 inch long at hatching, and grow to about 1/3 inch when fully developed. Damage varies according to location of infestation and nature of material attacked. Clothing hung undisturbed in dark, warm closets will be damaged first in soiled areas, later in widely distributed areas; folded and stacked woolens will have holes, shredded areas, and long gaps along creases where the larvae have concentrated their feeding. The larvae leave behind scraps of shredded cloth, webbing, and masses of dry black or dark brown droppings, this all together forming a sort of "clothes moth debris." Ragged patches will appear in furs, especially after they have been vacuumed. Carpeting will also have unexpected bare patches after cleaning; the larvae have eaten away the inside of loops of wool fiber which pass through and under the warp and woof of the carpet.

2. Dermestid Beetles

The hairy brownish larvae of these beetles (cf. Dry Foods Pests) occur wherever proteinaceous materials have accumulated. The adults live with the larvae but may at times fly inside the building to windows in daytime or to lights at nights. These insects frequent the sites where their food materials are allowed to accumulate; infestations have been found in stored clothing, woolen furniture and carpeting, dog and cat bedding (if not changed regularly), in the recesses of couches and chairs where dogs and cats feed and drop scraps of meat and bone, and in various cracks, crevices, and cold air ducts where woolen lint, hair, and feathers have accumulated.

D. Kitchen and Bathroom Pests

This category includes a variety of usually free-moving insects which are attracted to the kitchen by cooking odors or by the presence of water and food. The insects found in the bathroom are usually present by accident or in response to the moisture or food present. Occasionally, conditions are such in the bathroom that some insects, notably certain cockroaches and gnats, breed in the room and thus are a continuing nuisance.

1. Cockroaches

Cockroaches are typically seen at night when lights are turned on after a period of darkness. The insects come out for food and water after dark, and a good check for infestation is to return to a suspected room and turn the lights on after several hours of darkness. As populations increase, the insects apparently become overcrowded and spread to additional locations, such as cupboard shelves, kitchen clocks, light switch boxes, behind door and window frames, and behind the baseboards. The infestations may also spread along the plumbing to other rooms, warm basement areas, adjacent apartments, or to laundry rooms and storage areas in apartment buildings. In all such heavy, crowded infestations, the insects will begin to appear in subdued daylight as well as after dark.

The cockroaches ordinarily found in homes and other buildings in the west have almost always been brought in from an outside source, such as the grocery store, dairy and produce markets, hotels, or in packages shipped in from the warmer and more humid areas of the country.

a. German Cockroach

The most commonly occuring cockroach in Wyoming is Blattella germanica, the German cockroach; it is also called water bug, croton bug, or cockroach. All stages occur together; up to 50 eggs may hatch at one time and each female may produce 6 to 10 batches of eggs. From egg to adult usually takes 3 to 4 months, depending on food supply, humidity, and temperature. In locations that are both warm and moist, this cockroach builds infestations very rapidly.

This cockroach generally prefers the darker, damp hiding places, such as under sinks, in the plumbing spaces, around hot water heaters, under refrigerators, and (in commercial sites) under fruit and vegetable racks, milk storage areas, and soft drink storage. They will also spread to other rooms in the home if food and liquids are habitually left there for them to scavenge.

Adults are 1/2 inch to 5/8 inch long, light brown to gray brown, with two longitudinal black bands just behind the head on the

prothorax; these black bands diverge slightly toward the posterior. Nymphs of all sizes occur with the adults in the populations; the young are mostly black on the posterior part of the body and also have the two black bands behind the head. Adult males are slender and tapered toward the posterior; females have a wider body which is not tapered backward, and often are seen carrying an egg case protruding from the end of the abdomen.

b. Brown Banded Cockroach

This insect could be called the "cupboard and closet" cockroach because of its preference for the warmer upper areas in these two sites in the home or other buildings. They, too, come out after dark to forage for food and water. Otherwise, they are most often seen when kitchen cupboards are opened - they are nearly always in the uppermost parts of the cupboard and run to hide in cracks and crevices when the doors are opened. At night, they come out and travel over the cupboards and ceilings of the room. They run rapidly and may jump when crowded; males occasionally drop off a wall and take flight. A sure sign of an infestation is the droppings which accumulate in dishes stored on the upper shelves; they resemble coarsely ground black pepper.

Adults are light tan to mahogany brown, with moderately clear to indistinct light patches ("bands") of yellow at the front corners and near the center of each upper wing. (Wings are stacked flat on top of the back.) The nymphs are more distinctly "banded": the first two abdominal segments are light yellow, with the segments behind dark brown to almost black. Eggs are enclosed in a tan, leathery case which is glued into cracks and corners of the upper shelf habitat. The egg cases turn green as hatching nears. Development from egg to adult usually takes 6 to 7 months; populations build up more slowly but are quite persistent because of the insect's ability to hide.

This cockroach apparently does not maintain itself very well under Wyoming conditions; most occurrences have been traced back to a recent introduction via packages or luggage coming from the east or south. However, the range of this species has been extended enormously since 1942; and it is distinctly possible that an adapted strain may show in this area.

Other Species. Two other species, which are very common household and commercial pests elsewhere, have not been found to any extent in Wyoming. These are larger insects, measuring 1 to 1-1/2 inches average length and occasionally growing to 2 inches or more.

c. Oriental Cockroach

This insect is wingless and shiny black in the adult female stage; males have partially developed front wings, which are dark

brown or black, as is the remainder of the body. They can survive only where there is ample humidity and high temperature. Development takes about 1 year; the nymphs are about 1/4 inch long when hatched, and are light brown to tan; they gradually darken as they grow, becoming almost black in the last nymphal stage.

d. American Cockroach

This insect is reddish brown to dark brown, fully winged, and is 1-1/2 to 2-1/2 inches long as adults. They can survive in relatively dry habitats if water is available for drinking. They require 9 to 12 months to reach maturity, depending upon conditions. Nymphs are grayish when hatched but become increasingly brownish as they grow. This species could likely become established in some areas of Wyoming.

2. Silverfish and Firebrats

True silverfish usually occur in very damp situations at or near soil level and are occasionally a pest of stored books, papers, clothing, or cloth covered furniture stored in a damp closet or back porch. They do not invade the dry, heated parts of a building.

The firebrat (also called silverfish) derives its name from the high temperature habitat in which it thrives. Firebrat infestations can nearly always be traced to a hidden retreat in some extremely warm part of the infested building (98° to 102° F.); from there they come out at night to forage for food and water.

The mature firebrat silverfish is about 1/2 inch long, covered with silver-gray to brownish gray scales, is somewhat flattened on top, usually tapers toward the posterior end, and runs rapidly when disturbed. Identity of this insect is also easily confirmed by the antennae and posterior bristles or tails. The antennae are long and slender and are carried in a "V" position by the live insect. The posterior end bears three long filamentous "tails," which also are carried in typical fashion by the live insect: one pointed straight backward and one on each side carried at right angles to the body.

Young silverfish and firebrats resemble the adults in every way except size and ability to reproduce. They may grow to maturity in 3 months when conditions are ideal but may require 2 years or more under adverse circumstances.

These insects eat starchy or similar materials of plant origin. They chew holes in book covers, papers, drapes and clothing, and wall paper; they eat the glue from the flaps of envelopes and from the backs of stamps; they have been observed eating the wax from

floors of offices and hallways. They will follow heat ducts through walls and ceilings and may feed there on accumulations of lint and other debris of plant origin.

Firebrat infestations often are first detected at night when lights are turned on after a period of darkness; they will be seen running on ceilings, walls, or floors. They will be found later in closets, chests of drawers containing starched clothing, and in desks, files, or boxes of books and papers. They often drop or crawl into the bathtub and are unable to climb out, hence the claim that they come up through the plumbing. They are also found occasionally in bowl-type light fixtures when they can follow heating ducts through the ceiling.

3. Spiders

Numerous small spiders live inside the house and other buildings. These are usually no more than 1/2 inch across and are gray or black. They tend to hide in neglected corners and in spaces under or behind furniture, in storage closets, and in basement areas. None of the house spiders common to this region are harmful to man unless the person has a severe allergy to bites and stings.

These spiders usually spin a small amount of web in their resting places and here they place their egg sacs. The latter have a very tough silk covering (almost papery) and may contain 50 to 200 eggs. Both young and adults depend upon insects or other arthropods for their food, and consequently, occur in greater numbers in areas where the food supply is abundant. They usually forage for food at night.

A frequent complaint about spiders in the household originates in the bathroom. The spiders drop or slide into the tub and are unable to climb up the smooth sides to escape. They do not travel through the plumbing.

An extremely poisonous type of house-inhabiting spider, the brown recluse spider, does not now occur in Wyoming but is a future possibility. In areas where it is common, it frequently becomes a widespread household inhabitant, particularly in basement and storage areas where food is plentiful. The spider hunts for food at night and may roam a large portion of the floors, walls, and furniture in a home. It will take cover anywhere when disturbed, and will bite when crowded. Fortunately, the spider is not aggressive, biting only when picked up or when accidentally squeezed or pressed.

This spider is gray-brown to reddish brown, has long slender legs, and has a distinguishing "violin" shaped dark marking in the center of the top plate of the cephalothorax. The abdomen is often milky gray with a light covering of curved, short dark hairs.

4. Flies

This group of general nuisance insects includes the common house fly, the blow flies ("bottle flies"), and various shelter-seeking scavenger and predaceous or parasitic flies.

a. House Fly

The well-known common house fly is the smallest of this group, usually about 3/8 inch long; it is gray, has a few curved black bristles on its back, and may show a black "check" pattern on the abdomen and 3 black stripes on the thorax. The immature stages (egg, white maggot, pupa) usually are found outside in garbage, decayed organic matter, dog droppings, and barnyard manure. Adult flies swarm around organic wastes, including dog and cat droppings, and from there may fly into the house. Open doors and windows admit the flies, especially when cooking and other odors attract them.

These flies do not bite but their filthy outdoor habitats, ability to transmit disease producing microorganisms in and on the body, and their habit of crawling around on everything and everybody makes them a serious public health problem.

b. Blow Flies ("Bottle Flies")

The common blow flies, including those also known as the green and blue bottle flies, are common invaders of the household when evening or nighttime temperatures begin to drop. They are apparently seeking shelter for the winter. Inside the warm home, of course, they may remain active and create considerable disturbance with their buzzing about the windows in daytime and the lights at night.

The immature stages of these flies develop outside in decaying organic matter, especially carrion, but the adult flies have an extensive flight range and thus invade houses far from the breeding site. During the summer, adult flies may also be attracted to the vicinity of the home by dog or cat droppings, spoiled meat or meat products, rotting garbage, and "overripe" bird nests. Certain flowering plants (shrubs) are highly attractive to the adult flies; and if these are located near an entrance, many flies will accidentally move into the house. The onset of cool weather starts the flies hunting for a place to hibernate. The fall and winter blow flies can become active when air temperatures are very little above freezing, accounting for the midwinter and late winter activity of many of these large nuisance flies.

Blow flies do not bite and are of only limited concern from the standpoint of disease transmission and nuisance.

c. Flesh Flies, etc.

These are a miscellaneous group of invaders which apparently come indoors when seeking shelter from lower temperatures. They do not bite and are very unlikely to carry disease organisms to man. They have a high nuisance value to the housewife because of their large size and loud buzzing at the windows and lights.

d. Gnats

The term "gnats" as used here includes a large number of small to minute flies which can be divided into the following groups: (1) those which develop in the decaying organic matter of stagnant lakes and ponds, sewer systems, swamps, and river overflow areas and as adults fly at night to lighted windows, and (2) those which develop through their entire life cycle inside the house.

The gnats which invade the home from outside, generally after being attracted by window and porch lights, include midges, blackflies, mosquitoes, and various other minute flies, depending on locality and breeding grounds. Some species will bite but most of them are a problem only because of their nuisance value. The "gnats" which develop inside the home are usually very small to minute flies which are usually most numerous in the kitchen, pantry, or bathroom. They do not bite but their numbers and presence are an aggravation to the housewife. These insects usually are either fruit flies (Drosophila, et al), or fungus flies and gnats, or sewer flies.

The heart of the inside-the-house gnat problem is the source or breeding site. Fruit flies can be traced back to some fruit or vegetable substance which has been lost or overlooked in an out of the way place in the kitchen, pantry, back porch, garbage collection area, or garage. Eggs, larvae, and pupae develop in this decaying organic matter; adults stay there to deposit more eggs but also fly about the house, often gathering in large numbers at windows.

Fungus gnats and flies also develop in aging organic matter in the house or in the crawl space beneath if it is damp. Again, the source must be located if the problem is to be satisfactorily resolved. These gnats and flies may be breeding in:

1) The top layer of organic matter
2) The pots of well watered house plants
3) The damp accumulations of wastes
4) Around the garbage collecting area
5) The cracks and crevices around sinks, stools, or bathtubs where moisture and organic matter accumulate

6) The forgotten or misplaced containers of decaying bulbs, damp potting soil
7) Long stored vegetables (potatoes, carrots, onions, as examples).

Minute white, wormlike larvae or maggots will be found in these accumulations. Development is completed there and the adults spread outward as the population increases. The adults do not bite.

The sewer fly (moth fly, drain fly) is a pest of the kitchen, bath, or laundry center where moisture and organic spillover accumulate. This usually occurs in cracks and crevices, under overhangs or ledges where dish, bath, or laundry water splash and dries slowly, and around floor drains, especially in the basement laundry. The larvae develop in such habitats; adults fly around the site and go to lights or windows. The flies do not bite.

E. General Pests of the Interior

Here are grouped three types of insects which may be encountered in various parts of the home: (1) Ants are most often encountered in basements or on the main floor of houses with a slab floor, (2) bed bugs are associated with bedding and clothing, whether in the bedroom, basement, back porch, or storage area, and (3) fleas occur not only on pets but may also be present in great numbers in areas where the animal sleeps or loafs. Heavy concentrations of fleas have been encountered in empty houses that have been vacant for long periods; hungry adult fleas have also been picked up in shady areas of yards where the dog rests. The blood sucking and irritation abilities of bed bugs and fleas are well known; the presence of ants falls mostly into the general nuisance category.

1. Ants

Most species of ants which show up as household pests do not build their nests indoors. A very common infestation occurs when the main nest is situated in the yard against the foundation or slab next to an entrance. Workers will enter through the spaces around the door framing and roam around the interior in search of food. Swarming winged adults frequently come in through the same routes and fill the house with "flying ants." Other infestations may come from colonies located differently but with workers having access to the house along plumbing, through openings in the foundation, or via cracks in the basement floor.

In all cases of ants coming into the home or other building, the point of entry should be determined and the nest located and treated. If this cannot be accomplished, then baits and sprays may be used inside the house.

2. Bed Bugs

True bed bugs and the bird bed bug are closely related and look very much alike. Both are wingless, have a beak extending from the lower surface of the head back between the front legs, and are brownish red to dark red, with dark, curved, reclining hairs on top of the body. When hungry, the adult bugs may be almost 1/4 inch long and very thin and flat; a fully fed bed bug is deep red to purplish from the blood and has an elongate oval form, with more depth in the middle, and tapered to the posterior.

Bed bugs in the home have been introduced from some outside source, such as public housing, library books, public transportation, schools, jails, clothing exchange, and shipments of papers, books, clothing, or bedding. Once established, the bugs hide by day in the hidden recesses of the bed, in bedside furniture, in cracks in the walls, under door or window frames, and in picture frames, bedside lamps, clocks, and wall switch receptacles. They have also been encountered in large numbers in living room and porch furniture. The adults can go weeks without food and survive; when disturbed (feeding or not) scent glands are activated and a very disagreeable odor is produced.

A heavy population of bed bugs implies an equally heavy loss of blood by the hosts. Reaction to the bites varies from negligible to severe in different people; the psychological (nuisance) level of the problem is very high in most cases of infestation.

3. Fleas

Infestations of fleas in the home generally are associated with infested dogs or cats. Small wild mammals brought in alive nearly always are infested. Bringing small wild animals into the home should be discouraged because the fleas on wild rodents have high disease carrying potential. Rats and mice nesting in or under buildings frequently are infested with fleas, also.

Adult fleas are wingless, leathery, dark brown, and quite spinose; they jump when off the host. Eggs are produced by the female and dropped while she is still on the host animal. Eggs drop out of the hair of the cat or dog and accumulate in the bedding, carpeting, or litter in the house or in the grass and bedding outside. Minute white larvae hatch from the eggs and feed on organic matter in their habitat; pupation and emergence of new adults occur in the same place, usually the favorite sleeping or loafing place of the animal. One generation (egg to adult) may take only 3 weeks but may require 3 months or may even extend over the winter. The new adult flea ordinarily returns to the origianl host and the cycle is repeated. Where the flea population is high, the hungry fleas jump onto people and inflict painful bites. This problem is even more severe for

persons entering an infested house which has been vacant for a time; the population of fleas has increased steadily, and the insects are hungrier than ever before. Adult fleas can survive 100 days or more without food; new adults that have not fed at all can live 2 years or more without feeding.

F. House Plant Pests

Problems with insect-infested house plants frequently are in an advanced stage when discovered; the plants suddenly look "sick" because of feeding damage inflicted by one or more of the following insect or mite types.

1. Aphids

These "plant lice" usually build up in large numbers on the lower surface of leaves, and on the more hidden parts of stems, flowers, buds, and growing points. They suck the sap from the plant, causing retarded growth; they also inject a toxic substance into the plant tissues, causing stunting, yellowing, distortion, dead spots, blasted or dropped buds, and partially opened or deformed blooms.

Aphids are small to minute, somewhat round bodied, have long legs, are usually green, pink, yellow, or black, and occur in all sizes on the host plant. In many species the females give birth to living young (also female) which develop rapidly and soon begin reproductive activity. Young aphids are very similar to the adults except for size and wings. Adult aphids may be wingless or may have two pairs of membranous wings held rooflike over the body. When populations are very high, winged adults may leave the host plant and gather in large numbers on windows.

2. Mealy Bugs

This type of insect also sucks the sap from the plant, with symptoms very similar to those of an aphid infestation. The common name comes from the wax coating which completely hides the soft bodied, sluggish insect beneath. In some species, this wax covering is somewhat granulate or particulate, resembling corn meal; in many others, however, the wax is secreted in long, threadlike strands which cause the insect to resemble a small fluff of cotton. A heavily infested plant is apparently almost covered with these cottony masses, particularly on lower stems, in leaf axils, and on lower leaf surfaces. The nymphs are indistinguishable from the adults except for the difference in size.

3. Scale Insects

These pests, closely related to the aphids and mealy bugs, also suck sap from the host plant and cause many of the same symptoms

to appear. The actual insect attaches itself to a plant part when very young, secretes a waxy covering (the scale) which adheres tightly to the insect and the plant, and remains in the same spot thereafter. Young of all sizes and adult females are covered with the scale, which is characteristic for each species; adult males are winged but are minute and are seldom observed.

4. White Fly

This is also a sap-sucking insect which is usually a greenhouse pest but may be carried into the home on potted plants. Minute scale-like young and tiny, moth-like adults with four white wings are the stages most often observed. The adults normally rest on the lower surface of the leaves but fly about briefly when disturbed. Adults and young suck sap from the leaves, causing loss of vigor and reduced growth.

5. Fungus Gnats

These are minute gray flies which may be seen crawling about over the surface of the soil in pots of house plants, particularly when the potting mixture contains much decaying organic matter and is kept saturated with water. Eggs are placed in this medium, and minute larvae grow rapidly. As the level of the larval population increases, the larvae (maggots) begin feeding on roots and crowns of the plants. Plants do not thrive, soon become stunted, and may fail to flower. Adult flies are about 1/8 inch long. They do not feed on people but become a nuisance while flying about the house.

6. Mites

Plant feeding mites are minute relatives of the spiders and may cause severe damage to the plant by sucking the sap. Loss of green color and poor growth are usually the first symptoms noted. The mites are then found on the lower surfaces of the leaves, and, as the infestation grows on stems, buds, and upper leaf surfaces in the center of the plant. Most mites are 1/16 inch or less in length and may be yellowish, pale green, or pinkish. Heavier infestations often show extensive webbing on the under surface of the leaves. Eggs are stuck to the webbing and young of all ages are active in the web. Under warm, dry conditions, the life cycle is short and populations build rapidly.

7. Earwigs

Earwigs are elongate, flattened, leathery, dark reddish to dark brown insects with a pair of hooks ("forceps") on the end of the abdomen. Adults may be almost 1 inch long and have 2 pairs of wings; the wings are laid flat on top of the insect and the front

pair meet in a straight line down the middle. They run about when disturbed and may curl the posterior part of the body in a defensive or threatening gesture.

These insects usually attack potted plants when the latter are placed outside for the summer. When a population of earwigs is already present in the moist, protected area where the pots are placed, the earwigs climb into the pots and attack the tender parts of the plants. Much damage may occur; the insects often remain in the pots and thus are carried inside at the end of summer. Damage to the plant continues and the insect also becomes a source of alarm to the susceptible housewife.

8. Springtails

These minute gray or whitish insects may occur in great numbers in the damp organic matter around the base of potted plants. When the plants are watered, the insects often float on the surface and their presence (and numbers) becomes a concern to the housewife. They are seldom noticed until populations are extremely high. The insects have attachments on the lower surface of the abdomen which enable them to jump several inches when disturbed.

The springtails apparently do little or no damage to growing plants and do not bite people; they frequently do have a high nuisance rating, however.

G. Bird Nest Pests

Birds often nest in many locations in or about the house and other buildings. These nests usually become fouled with droppings and may contain dead nestlings, all of which attract adult blow flies to lay eggs and produce maggots. The nests usually are also heavily populated with blood sucking mites and the bird bed bug, and debris-eating lice. The total population of all these pests will vary with the age of the nest, species of bird, and season.

The problem to the human occupant of the building arises when the nest is vacated for any reason. The insects and mites respond to the loss of food supply by leaving the nest and crawling off in all directions. Those which gain access to living quarters of people cause the problem. They seldom bite the human occupants but do give rise to an extremely high level of agitation and irritation.

H. Firewood Insects

Fresh cut firewood may (and often does) contain a variety of living insects in one stage of development or another. Those most commonly encountered are (1) adult wood boring beetles, wood boring wasps, carpenter ants, carpenter bees, and termites; and (2) larvae of beetles and wasps.

These wood-inhabiting insects normally overwinter outdoors in the logs where they have started life. If the log is cut and brought in during the winter, the insect inhabitants become active as soon as they warm up. Adults emerge into the house, garage, or basement, causing immediate concern over possible attacks on the house itself. Larvae resume activity, calling attention to themselves either by the clicking noise of their feeding or by the accumulations of droppings and finely chewed wood ("sawdust") beneath infested wood. Carpenter ants will emerge from their tunnels in the wood and cause an immediate commotion.

Ants, bees, and wasps might, if crowded or caught alive after emergence, cause some slight damage by stinging or biting. The wood boring beetles ordinarily will not attack finished wood inside the house and virtually all species will not attack unfinished wood in the garage or basement (but cf. structural pests). Heating and drying the wood also tends to shorten the life expectancy of wood boring larvae, and it soon kills the young of carpenter bees and termites.

I. Occasional "Nuisance" Pests

Most of the arthropods in theis category have become accidental "guests" of the home or other premesis while being attracted to lights while seeking nesting sites, food, hibernation quarters, lower temperatures, or higher humidity. Although it is not possible to account for every unwelcome arthropod in this manner, it is in most cases one of these basic activities which brings them inside.

For convenience, the pests here have been divided to form two major groups, as follows: (1) those which fly into the premises and whose flying activities cause most of the problem; and (2) those which crawl into the home and create disturbances as they move about in this fashion.

The first group contains the following: cutworm and a few other moths (millers), ants, bees, and wasps. Group 2 has been further subdivided: crickets and earwigs, beetles, true bugs, other arthropods.

1. Flying Types

a. Cutworm Moths (Millers) and Others

These adult insects are attracted to lights at night and many find their way inside when screens are opened and closed or do not fit properly. Others find their way into open garages at dusk and later remain there in dark corners; then, when the connecting door is opened in the evening, the moths are attracted to the lights inside. The individual moths are harmless unless the inhabitants are allergic to scales of the body and wings; the roasting bodies in lamps create a rather

offensive odor, also. Those moths which do not gain entry into the home may fly at about dawn to the flower beds and lawns; while there the females leave eggs which a few weeks later produce cutworms, certain cabbage worms, or other larval pests of lawns and ornamentals.

b. Ants

Flying ants are strictly accidental invaders unless emergence from a nest has occurred indoors (see General Interior, part E). Swarming (emergence of new reproductives) of most species takes place outside and by sheer numbers some of them find their way inside. They are essentially harmless.

c. Bees

An occasional stray honey bee, bumble bee, carpenter bee, or other small wild bee may find its way indoors. These are usually interested only in escaping from the enclosing door or window; they are ordinarily not hazardous unless they are caught and handled, particualrly by young children.

A far more serious problem occurs when a swarm of honey bees settles into a porch ceiling, a wall space, or an attic opening. In essence, a colony of bees has been founded, corresponding to a hive colony in an apiary. Interference with passage of worker bees on their various flights may bring about stinging reactions; various adverse influences, such as cold weather, damp, dark days, or robbing by other bees may also cause immediate and severe sting responses in the bees.

The queen bee is well hidden inside the nesting site and she must either be caught and removed or killed before the problem is solved. An experienced beekeeper, if available, should be consulted as soon as possible after the bees are discovered. Many people are allergic to bee sting venom and the colony should be cleaned out as soon as possible.

d. Wasps

Two types usually are responsible for the problems here. First, is the "paper nest wasp" (Polistes sp.) which build small to medium nests suspended from overhanging eaves, porch ceilings, steps, corners of window and door frames, run-off guttering, and loose boards. The nests are made of gray, chewed wood pulp ("paper") and resemble small upside down goblets or saucers. The wasps are about 3/4 inch long, have a narrow "waist" between thorax and abdomen, have 2 pairs of wings (usually folded lengthwise), and are brown, mottled reddish and brown or brownish with subdued black stripes or

patches. The workers on a nest are easily disturbed by unusual movements or noise (i.e., slamming doors) and readily leave the nest *en masse* to attack. The sting is quite painful and may cause severe allergic reactions in previously sensitized persons.

Yellow jackets tend to nest in a cavity but on occasion may build in the open. They often invade an opening in a wall or one leading to the porch attic space. A more typical nest built in the ground near an entryway is still a source of difficulty. Once a colony is established in such locations, frequent foraging flights are undertaken. Interference with the flight pattern, sudden movements or slamming doors may elicit the sting reaction. Symptoms of the stings are about the same as for the paper nest wasp. The yellow jacket is perhaps even more ill-tempered than the paper nest wasp, so that quick elimination of the nest is in order.

2. Crawling Types

a. Crickets and Earwigs

The cricket group includes not only the common house cricket but also the shield-back, Jerusalem, and Mormon crickets. Some species may set up apparently permanent residence in a cool, damp basement but they normally are unable to complete the developmental cycle indoors. They usually enter a basement or ranch style dwelling by crawling in under doors, through open windows, or through other foundation openings when the weather is hot and dry or when the nighttime temperatures drop.

Crickets are black, brown, or gray; when mature, they have wings with which the chirping song is produced. Adult females have a long, slender speartipped ovipositor on the end of the abdomen. These crickets may, if numerous, cause some loss by chewing on clothing, linens, drapes, or papers.

The shield-back and other crickets are larger and heavier; yellow, brown or black, have comparatively large and heavy jumping hind legs; and are wingless. The antennae of most types are slender and very long. They feed largely upon other arthropods in the habitat and are harmless unless caught and handled carelessly; the powerful jaws are capable of inflicting a painful bite.

Earwigs may occasionally be "crawling visitors" in a damp basement or back porch closely adjoining an infested outside area. (See Part F, House Plant Pests.)

b. Beetles

1. Darkling Beetles ("Stink Bugs")

The darkling beetles are members of a family which includes many species that, when disturbed, freeze into position with the tip of the abdomen elevated. If annoyed still more, they eject from the end of the abdomen an acrid, odorous defensive fluid which has given them the common name, stink bug. This is a misnomer, however, since they are beetles and not true bugs.

Several species wander about over the surface of the ground, driveways, and patios, and thus may accidentally enter dwellings. Most of these are shiny black, about 1/2 to 3/4 inch long, and very hard bodied. They move slowly and many feign death when disturbed. They are harmless in all ways, except that the fluid from the stink bug types can cause painful irritation to the eyes or sensitive areas of skin.

2. Weevils

The strawberry root weevil is the chief pest in this group but several others are possibilities. The strawberry root weevil is about 1/4 inch long, dark brown to black, and has a short, stubby snout on the front of the head. The antennae of a live, crawling weevil stick out sideways from the head at the base, then turn abruptly forward at about the middle. The front wings are fused, making the insect flightless; the surface of the wings and thorax is variously pitted or sculptured in this weevil and others.

This and several other weevils begin to crawl about over the ground in mid summer, continuing until late August or early September; during this active phase, many of them find their way into homes and other buildings. They are harmless.

3. Miscellaneous Beetles

A number of other beetles, such as ground beetles, lady beetles, and "June bugs" may find their way into the home at various times during the summer and fall. Some are originally attracted to lights at night, then drop down and crawl in under doors or through small openings. They are harmless to people except for an occasional specimen which will try to bite when handled. Other types, such as the lady beetles, may crawl into houses while searching about for hibernation sites.

c. True Bugs

The insects in this section (also including the bed bugs) are characterized by a piercing-sucking type of mouthparts, which are visible as a beak or proboscis arising from the lower front surface of the head; winged forms can also be identified by the front wings, which are leathery thick in the basal two-thirds and are thin and membranous in the outer portion. The abdomen is flat on top and rounded underneath in most forms.

1. Boxelder Bug

This insect is a widely distributed nuisance type of bug associated with box elder, ash, and soft maple trees. The adults are flat backed, about 1/2 inch long, are deep brown to black with three red stripes (1 middle, 1 on each side) on the thorax and with red lines in the forewings. Nymphs are more round bodied, lightly hairy, and always bright red.

The adults, in late summer or early fall, aggregate in window wells, deep window frames, doorways, and other sheltered locations on the south and west sides of buildings. During their restless crawling about in these sites, they find and enter openings to the inside. Here they crawl about on windows, nearby walls, and draperies; they sometimes stain the draperies and walls with spots of liquid fecal material. They do not bite.

2. Kissing Bugs

These nighttime visitors (kissing bug or conenose bug) are named for their habit of sucking blood from the lips of sleeping persons. The bug may be up to 1-1/2 inches long, is usually black or brown, and has a narrow pointed head with a short curved beak beneath. The actual bite of of the bug usually goes undetected at the time, but severe pain and allergic reactions may follow.

This bug normally lives outdoors in the nests of small rodents. The bugs leave the nests and enter houses in search of food (other insects), particularly when the rodent nest is against a foundation or in a crawl space. Once inside a bedroom, they hide by day in the bedding or other nearby cover. Older buildings, with numerous cracks and other openings to the outside, are especially susceptible to kissing bug invasion.

3. Miscellaneous Bugs

A variety of small "true bugs" may accidentally enter the home in late summer or fall. The bugs usually are either responding to lights or are in search of hibernation sites, therefore do the interior no damage. A few of them, if handled carelessly, will bite in self defense; otherwise, they are quite harmless.

J. Other Arthropods

These are the creeping and crawling types which are not insects. The most obvious difference is that insects have only six legs, while these forms all have eight or more. It is, of course, difficult to see eight legs on the clover mites because of their minute size, but other characteristics will identify them. Another distinguishing feature is the number of main body divisions or regions: insects have three (head, thorax, abdomen) while these "other arthropods" have only two (head and body in centipedes and millipedes; cephalothorax and abdomen in spiders, et al). All are wingless.

1. Clover Mite

This mite develops on clover and lawn grasses but leaves the host plant and crawls to the south and west foundations of buildings to molt, take shelter, or lay eggs. Many of them crawl into the house instead of going back to the host plants. Inside the house, they are most often observed on window sills and on the walls and ceilings near or above windows. They are brown or red, pinhead size or smaller, and have long front legs (visible only with a hand lens or magnifying glass). They do no actual damage inside the house.

2. Spiders

Many spiders live in the grass, flower garden, and shrubbery near the foundations of houses. Some of these individuals will wander into homes or garages in times of cool nights, hot and dry weather, and food shortage. The forms commonly involved are hunting spiders, crab spiders, and grand daddy longlegs, a near relative. These will not bite except as a last resort defensive measure.

a. Black Widow Spider

These normally live outside, under loose boards and other cover on the ground, or in silk tunnels (with a small apron of webbing) in small shrubs. They also have been found in considerable numbers under front or back door steps and under the seat of outdoor toilets. This spider will come indoors, especially at night, probably in search of food.

The female black widow spider is usually shining coal black (may be dark brown or gray), long legged, with a rounded abdomen; on the lower surface of the latter will be found a cherry red hour glass shaped spot or a midventral chain of small red dots. In some forms a single red dot (rarely two) is found on the mid-dorsal line near the end of the abdomen; these presumably are immature spiders, but even so, the bite is severe.

The bite of the black widow spider is seldom fatal, but pain and other effects are usually severe. The spider is not aggressive, but will bite readily in self defense. Prompt medical attention is required.

b. Brown Recluse ("Fiddle Back") Spider

This spider is a common and very serious problem in the states to the south and east. Its presence is not known in Wyoming. Our only verified record was a live specimen which came inside a box of household goods shipped from Kansas. It is likely to move into some parts of the state in the future.

Full grown adults of this spider have long, spindly legs which may extend outward to 1-1/2 inches across. The body is relatively small and has a light coating of brown hair. The abdomen may be cream colored to dark brown and may have curved rows of fine hairs on top. The upper thorax plate (between leg bases) is light brown to gray and has a dark violin shaped marking in the center; the "handle" points forward. The abdomen may be globular when full of eggs or elongate oval at other times.

All stages live together in warm, dry basements, garages, sheds, and sometimes under smaller cover outdoors. Small amounts of webbing are formed in a central resting area; egg sacs are left here. The spiders move out during the night and roam about over the floors, walls, and furniture, apparently in search of food. They take temporary shelter in a bundle of laundry on the floor, a basket of clothing, or among loosely assembled items on the floor of a closet, a basement bedroom, and in storage areas of other buildings. Fortunately, these spiders are not aggressive toward man, biting only in self defense when pressed or squeezed. Handling a clothes basket or other items containing a hidden spider brings a person's hands or arms into accidental contact with the spider, which bites in return.

Reaction to the bite is quite variable. In many cases, a sharp stinging pain is felt, followed by swelling and inflammation around the point of bite. In more severe cases, the venom is absorbed into the blood and affects the victim systemically

as well as locally. The flesh underneath and surrounding the point of the bite dissolves and a hole is produced; this action continues until the cavity reaches bone or emerges on the other side, as with a bite between the fingers.

Prompt medical attention is necessary. If at all possible, the spider which did the biting should be captured (or scraped up) for later positive identification.

3. Solpugids

The solpugids (sun spiders) are fearsome appearing creatures but are harmless unless caught in the hand and forced to bite in self defense. They may be 1-1/2 inches long, are heavy bodied, usually tan or yellow, have a front pair of appendages normally held pointed forward along each side of the cephalothorax, and have four sharp-pointed, black-tipped jaws directed forward. They have no poison glands and, therefore, can harm a person only be mechanical action of the jaws. They frequently crawl inside houses during late summer, apparently in search of food or to escape the heat or low humidity.

4. Scorpions

These close relatives of spiders and solpugids are easily recognized by the pincers in front, four pairs of legs, and stout body with a long, narrow post-abdomen bearing a curved spine-like stinger at the tip. Scorpions usually are yellow brown to tan and have a slick, oily looking body surface. They may enter the home in search of insects for food or in response to adverse weather conditions and might (rarely) set up a breeding colony inside. They are not aggressive and will sting only when forced to do so in self defense. Since they usually hide by day inside some type of dark cover, many stings occur without warning. In areas where scorpions are abundant, shoes and boots, in particular, should be carefully checked in the morning. Most common species have a very painful but not fatal sting; the sting of a few types in the desert southwest areas can be fatal to children and may cause very severe symptoms in adults.

5. Centipedes

Centipedes around the home are found under loose boards, rocks, accumulations of plant debris, and other damp hiding places either inside the basement or out; they may be numerous in flower beds, around well watered shrubbery, or in deep, dark window wells. They feed on other small animal life (insects or spiders) and are considered beneficial. An occasional specimen wanders into a basement or in around the patio doors, especially when hot, dry conditions prevail in the outdoor habitat. They do not bite people unless caught and carelessly handled; most common types are too

small to cause much damage but the larger species are capable of inflicting a painful bite.

Centipedes have flattened but somewhat worm-like bodies with only one pair of legs on most segments. They have a pair of long slender antennae, usually pointed ahead at an angle to the head. They run rapidly, often with a twisting motion in the body; legs may be long, slender, and fragile, or (in a few types) stouter, curved, and almost hook-like.

6. Millipedes

Millipedes live primarily in damp locations where decaying organic matter is available for food. They are mostly wormlike ("thousand legged worms") with smooth rounded body segments and two pairs of legs on each apparent body segment. The head is rounded and the antennae are rather short. A few types have angulate body segments and a rough, granular surface. The larger, wormlike types may be 3 inches or more in length and usually curl into a tight coil when disturbed. These give off an offensive odor when handled but otherwise are harmless. Millipedes of various types occasionally enter homes, usually in a damp situation. They may be seeking hibernation quarters.

K. Structural Pests

Insects which attack the structural wood of houses and other buildings are (1) termites, (2) beetles, and (3) ants. The two common termites are (a) the subterranean and (b) the dry wood forms; the Formosan termite has possibilities for the future. Carpenter ants cause most of the damage done by that group. The beetle group includes (a) powder post beetles, and (b) various borers, both larval and adults.

1. Termites

a. Subterranean

Termites are basically scavengers on waste plant cellulose materials. Unfortunately, when the supply of natural food is exhausted, they attack the nearest man-made source, often a house or other buildings. They also will attack living trees, shrubs, or flowering plants. This termite is found in many parts of Wyoming.

Entrance to a building is made through some hidden access where there is either a direct or a well protected connection to the soil. In most cases, the soil supplies the essential moisture and also the chief nesting site. Connection between nest and food supply in buildings is made by way of covered tunnels up the inside or outside faces of walls, through cracks, crevices,

or voids in foundations, through cracks or other openings in basement floors, or directly through wood building parts (i.e., supporting posts, concrete form boards) projecting through the basement floors or walls to make direct contact with the soil.

Worker termites extend their activities into the house from the point of entry by sealed tunnels or by burrowing through wooden contruction features or through furniture, books, papers, clothing, or anything else of plant origin. When the insects are forced to the surface, they seal off the opening or passageway with tunnel material, a mixture of saliva, mud, and fecal material. They may work for years undetected inside a food source, such as a wooden column, a stack of books or papers, stored furniture, and wooden floors or walls. Such hidden feeding by the insects eventually weakens the structure and causes it to collapse, at which time the infestation (and damage) comes to light.

An established termite colony contains one or more queens, countless workers, many soldiers, and at the proper time of year, winged new male and female reproductives. All forms have the thorax and abdomen broadly joined together; this distinguishes them from ants, where the junction of the two body regions is a very narrow stalk. The queen is usually so swollen for massive egg production that she cannot move and is, therefore, seldom seen. The workers are wingless, white, blind, soft-bodied, and have virtually round heads; they are up to about 1/4 inch long. Soldiers also are blind, wingless, white and soft bodied except for the head, which is elongate, yellow, strongly sclerotized, and equipped with a pair of large, very strong mandibles. Workers do all the feeding on the wood and must feed the other members of the colony. The soldier's only apparent function is to use the jaws defensively against any invader. The new reproductives have black bodies and two pairs of gray, semitransparent membranous wings; these are laid flat over the body and are easily detached. When external conditions are right, the nest is opened and the new reproductives swarm out for mating and starting new colonies.

Swarming is often the first indication the home owner has of an infestation. "Off schedule" swarming occurs indoors near the furnace or hot water heater, in late winter, apparently a response to the heat and moisture of the building interior. Natural outdoor swarming usually occurs in mid or late summer. In hotter, drier areas, this nearly always follows a daytime rain. Literally hundreds of new reproductives emerge from an established, well fed colony. A colony with a good moisture supply and plenty of cellulose material for food can persist for years.

b. Dry Wood Termite

This insect, which is not known to occur in Wyoming, lives in colonies which have no connection with the soil. Their nests may be located anywhere in a building with a sufficient food supply; they may attack floors, sills, door and window frames, and other wooden structural parts. Furniture and other loose items are rarely attacked. Their tunnels are cleaner than those of the subterranean termite, and they sometimes open the tunnels and remove quantities of fine, dry fecal pellets. The individuals resemble their subterranean counterparts.

2. Powder Post Beetles

The powder post beetles are almost as destructive to seasoned wood in various types of structures as are termites. Tiny grublike larvae chew their way back and forth through dry wood without any surface indication of their presence. Eventually adult beetles emerge through "pin holes" in the surface; piles of fine "sawdust" may accumulate below such emergence holes. Repeated infestation and continuous interior damage eventually cause the timber to give way. Infestations may start in seasoned wood in the forest or in the sawmill storage area but not show up until much later, when the finished product is already in use. Once an infestation is established in an area, almost any type of dry, seasoned wood is subject to attack.

The adult beetles are 1/12 to 1/5 inch long, hard shelled, usually brown, and are either stubby and rounded or more elongate and cylindrical. They may have pits or other sculpturing on the wings and top body surface. Adults lay eggs in the pores of the wood and new larvae attack still more wood. The larvae are short, stout, and grublike (slightly "C"-shaped); they have a white body, brown head, and are legless. Larval feeding reduces the dry wood of the interior of the timber to a fine powder; if bark is present, everything inside the bark may eventually be pulverized. Adults will not oviposit on painted or varnished wood; infestation or reinfestation of such wood is prevented, but painting or varnishing new wood will not destroy larvae or adult beetles already inside.

3. Carpenter Ants

These are large (1/2 inch long or more), dark brown or black ants which destroy wood. They grind the wood to bits, hollowing out elaborate tunnels and chambers while chewing but not actually eating the wood. They commonly attack fence posts, telephone or telegraph poles, dead trees, stumps, or stacked firewood and lumber, but will invade sills and other timbers of buildings as well.

The queens are winged, heavy bodied, black, and 1/2 inch or more long. Eggs are translucent and round; larvae are white, grublike, legless, and have white heads. Pupation takes place inside a tan, papery cocoon. Males and the early workers are smaller (1/4 inch long) but later groups of workers are bigger.

A queen, several small workers, and eggs have been found in mid-winter in small cells chewed into the wood beneath the bark of standing dead trees or fallen logs. Although these overwintering cells are located in a drier portion of the tree trunk, moisture often is present and seems not to be harmful. Ice crystals in the cell with the ants apparently do not adversely affect the occupants. The ants will remain active throughout the year if the nest is located in wood near a source of heat in a building.

4. Miscellaneous Borers

Adult wood-boring beetles may cause a problem by attacking unfinished, mature wood which still has the bark in place. Such lumber built into garages, sheds, floor joists, or unpeeled logs or lumber used in cabin construction suffer new or renewed infestation by the beetles. Adult female beetles habitually place their eggs in the natural crevices occurring in the bark; larvae hatching here chew their way into the wood beneath the bark and proceed to function as wood borers. Continued reinfestation may cause severe damage to individual boards or timbers, with subsequent weakening of the structure.